CLAIMS

1. A device for treating biological material, which at least comprises a chamber which at least can be closed in relation to the outside and which comprises an inner space for receiving said biological material, wherein said chamber comprises at least one electrode which is placed in contact with said inner space of said chamber and is provided for generating an electric field, wherein said chamber (1, 25, 45, 55, 65, 75) comprises at least one inlet line (7, 36, 49, 50, 52, 56, 67, 76) which comprises at least one opening (8, 37, 53) arranged close to said electrode (3, 4, 28, 29, 47, 48, 54).

2. The device according to claim 1, wherein said inlet line (7, 36, 49, 50, 52, 56, 67, 76) is designed like a tube.

3. The device according to claim 1 or 2, wherein the inner diameter of said inlet line (7, 36, 49, 50, 52, 56, 67, 76) is decreased in the direction of said electrode (3, 4, 28, 29, 47, 48, 54).

4. The device according to claim 1, 2 or 3, wherein at least one reservoir (9, 32) for receiving a solution, which is built of a wall (17), is at least connectable to said inner space (2, 26, 46, 58, 66) via said inlet line (7, 36, 49, 50, 52, 56, 67, 76).

5. The device according to claim 4, wherein said inner space (2, 26, 46, 58, 66) of said chamber (1, 25, 45, 55, 65, 75) and said reservoir (9, 32) are separated from each other by a separating unit (11), wherein said solution can be selectively introduced into said inner space (2, 26, 46, 58, 66) of said chamber (1, 25, 45, 55, 65, 75) through said separating unit (11).

6. The device according to claim 4, wherein said separating unit (11) is a valve or a fragile membrane which can be destroyed by applying pressure.

7. The device according to any one of the claims 1 to 6, wherein said chamber (1, 25, 45, 55, 65, 75) is at least aseptically sealed in relation to the outside.

8. The device according to any one of the claims 4 to 7, wherein said wall (17) building said reservoir (9, 32) comprises an elastic or deformable material.

9. The device according to any one of the claims 4 to 8, wherein said reservoir (9, 32) is at least connectable to said chamber (1, 25, 45, 55, 65, 75), for example, connected to said chamber (1, 25, 45, 55, 65, 75) building one piece or connectable to said chamber (1, 25, 45, 55, 65, 75) via a connecting member (30, 31), preferably a Luer lock.

10. The device according to claim 9, wherein said chamber (1, 25, 45, 55, 65, 75) and said reservoir (9, 32) form a unit which is at least aseptically sealed in relation to the outside.

11. The device according to any one of the claims 1 to 10, wherein said chamber (1, 25, 45, 55, 65, 75) comprises at least one wall area (13, 20) which is self-sealing and can be perforated, preferably by a canula (14, 33, 41), or which is equipped with at least one inlet comprising a connecting member (30, 31), preferably a Luer lock.

12. The device according to any one of the claims 1 to 11, wherein said chamber (1, 25, 45, 55, 65, 75) has a minor cross-section and is formed like a serpent or spiral.

13. The device according to any one of the claims 1 to 12, wherein said chamber (1, 25, 45, 55, 65, 75) is divided in several subunits by at least one dividing member.

14. The device according to claim 13, wherein said dividing member comprises a valve or a filter (5).

15. The device according to any one of the claims 1 to 14, wherein a container (12, 40) is at least connectable to an outlet opening (51) of said chamber (1, 25, 45, 55, 65, 75), for example, connected to said chamber (1, 25, 45, 55, 65,

75) building one piece or connectable to said chamber (1, 25, 45, 55, 65, 75) via a connecting member (30, 31), preferably a Luer lock.

16. The device according to claim 15, wherein a partition member (61, 64) is disposed between said chamber (1, 25, 45, 55, 65, 75) and said container (12, 40).

17. The device according to claim 16, wherein said partition member (61, 64) is a valve or a filter element.

18. The device according to any one of the claims 15 to 17, wherein said container (12, 40) comprises at least one wall area (13, 20) which is self-sealing and can be perforated, preferably by a canula (14, 33, 41), or which is equipped with at least one outlet comprising a connecting member (30, 31), preferably a Luer lock.

19. The device according to any one of the claims 15 to 18, wherein said container (12, 40) is a syringe or an infusion pot.

20. The device according to any one of the claims 15 to 19, wherein said container (12, 40) and said chamber (1, 25, 45, 55, 65, 75) form a unit which is aseptically sealed in relation to the outside.

21. The device according to any one of the claims 11 to 20, wherein said wall area (13, 20) which is self-sealing and can be perforated comprises a synthetic material, for example a polysiloxane, an elastomer or rubber.

22. The device according to any one of the claims 1 to 21, wherein said chamber (1, 25, 45, 55, 65, 75) comprises two oppositely arranged electrodes (3, 4, 28, 29, 47, 48, 54) which are placed in contact with said inner space (2, 26, 46, 58, 66), or in that a further electrode (3, 4, 28, 29, 47, 48, 54) can be introduced into said inner space (2, 26, 46, 58, 66) of said chamber (1, 25, 45, 55, 65, 75).

23. The device according to any one of the claims 1 to 22, wherein said electrode (3, 4, 28, 29, 47, 48, 54) or said electrodes (3, 4, 28, 29, 47, 48, 54) comprise(s) an electroconductive synthetic meterial, preferably a plastic material which is doped with conductive material.

24. A method for treating biological material, wherein said biological material is introduced into the inner space of a chamber which at least can be closed in relation to the outside and which comprises at least one electrode which is placed in contact with said inner space of said chamber and is provided for generating an electric field which is generated in said inner space after introducing said biological material by applying voltage to said electrode and a further electrode which is in contact with said inner space of said chamber, wherein said biological material is almost completely rinsed out of said inner space (2, 26, 46, 58, 66) of said chamber (1, 25, 45, 55, 65, 75) by means of a solution after said electric field is generated, said solution being guided via an inlet line (7, 36, 49, 50, 52, 56, 67, 76) of said chamber (1, 25, 45, 55, 65, 75) along at least one electrode (3, 4, 28, 29, 47, 48, 54).

25. The method according to claim 24, wherein said solution is guided along said electrode (3, 4, 28, 29, 47, 48, 54) at high flow rate.

26. The method according to claim 24 or 25, wherein said solution is guided along the cathode.

27. The method according to claim 24, 25 or 26, wherein said biological material is introduced into said inner space (2, 26, 46, 58, 66) of said chamber (1, 25, 45, 55, 65, 75) by means of a syringe or the like through a wall area (13, 20) which is self-sealing and can be perforated.

28. The method according to any one of the claims 24 to 27, wherein a separating unit (11) is opened by extraneous mechanical impact, said separating unit (11) separating said inner space (2, 26, 46, 58, 66) of said chamber (1, 25, 45, 55, 65, 75) from a reservoir (9, 32) which contains said solution, said reservoir (9,

32) being connected or connectable to said chamber (1, 25, 45, 55, 65, 75) via said inlet line (7, 36, 49, 50, 52, 56, 67, 76).

29. The method according to claim 28, wherein said separating unit (11) is a valve which can be opened by extraneous mechanical impact at least in one direction, or in that said separating unit (11) is a fragile membrane which can be destroyed by extraneously applied pressure.

30. The method according to any one of the claims 24 to 29, wherein said biological material and said solution, respectively, are introduced into a container (12, 40) which is at least connectable to an outlet opening (51) of said chamber (1, 25, 45, 55, 65, 75).

31. The method according to any one of the claims 24 to 30, wherein a reservoir (9, 32) which contains said solution is at least partially formed by an elastic or deformable wall (17) and a pressure is extraneously applied to said wall (17).

32. The method according to any one of the claims 24 to 30, wherein said biological material is rinsed into said container (12, 40) through a partition member (61, 64), in partiucular a valve or filter (5), which is disposed between said chamber (1, 25, 45, 55, 65, 75) and said container (12, 40).

33. The method according to any one of the claims 29 to 32, wherein the treated biological material is removed from said container (12, 40) using a syringe or the like through a wall area (13, 20) which is self-sealing and can be perforated.

34. The method according to any one of the claims 24 to 33, wherein said biological material comprises living cells, preferably eukaryotic cells, derivatives of cells, subcellular particles or vesicles, into which biologically active molecules, preferably nucleic acids, are transferred by generation of said electric field, or which are fused by generation of said electric field.

35. The method according to claim 34, wherein said biologically active molecules are solved in a buffer solution and introduced into the inner space (2, 26, 46, 58, 66) of said chamber (1, 25, 45, 55, 65, 75) before the biological material is added.

36. The method according to claim 34 or 35, wherein the transfer of said biologically active molecules into said living cells is achieved by a current density of up to 120 A/cm^2, preferably 80 A/cm^2, or by a voltage pulse having a field strength of 2 - 10 $kV*cm^{-1}$ and a duration of 10 - 200 μs.

37. The method according to claim 36, wherein the transfer of said biologically active molecules into said living cells is achieved by a current flow following said voltage pulse without interruption, said current flow having a current density of 2 - 14 A/cm^2, preferably 5 A/cm^2, and and a duration of 1 - 100 ms, preferably 50 ms.